APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,411	07/08/2003	John Guthrie	413598001US	9291

			EXAMINER
25096	7590	01/11/2006	DAYE, CHELCIE L

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
		10/616,411	GUTHRIE, JOHN
Office Action Summary		Examiner	Art Unit	
		Chelcie Daye	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 July 2003</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>08 July 2003</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☒ All   b)☐ Some * c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is issued in response to Application filed on July 8, 2003.

2.   Claims 1-20 are pending.

Drawings

3.   New corrected drawings in compliance with 37 CFR 1.121(d) are required in this

application. Applicant is advised to employ the services of a competent patent

draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer

prepares new drawings. The corrected drawings are required in reply to the Office

action to avoid abandonment of the application. The requirement for corrected drawings

will not be held in abeyance.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   **Claims 1,2,5,11,16 and 17, are rejected under 35 U.S.C. 102(b) as being**

anticipated by Hitz (US Patent No. 5,819,292).

Regarding Claim 1, Hitz discloses a method in a computer system for

creating a file system snapshot, the data of the file system being organized

hierarchically via nodes, the method comprising:

copying a root node of the file system to a new node that points to the

same child nodes of the root node (column 18, lines 19-23, Hitz), the new node

represents a root node of the snapshot (column 18, lines 24-26, Hitz); and

when a node of the file system is modified[1] (columns 6 and 7, lines 67 and

1, respectively, Hitz; wherein "dirty" indicates modify),

replacing ancestor[2] nodes of the node that have not yet been replaced

with a new node (Fig.19; column 19, lines 63-67, Hitz);

replacing the node with a new node that points to the same child nodes of

the replaced node (Fig.18C; column 19, lines 23-26, Hitz); and

effecting the modification on the new node (column 20, lines 1-6, Hitz).

Regarding Claim 2, Hitz discloses a method wherein when multiple

snapshots occur (Fig. 22, items 2110A, 2110B, and 2110C; column 18, lines 8-

10, Hitz), the ancestor nodes of the node to be modified that are replaced

(Fig.19; column 19, lines 63-67, Hitz) are those ancestor nodes that have not yet

been replaced during the current snapshot (column 20, lines 38-43, Hitz).

---

[1] Examiner notes – The term "dirty" throughout the "Hitz" reference represents modify (columns 6-7, lines
67 and 1, respectively, and column 11, lines 57-59 and column 12, lines 41-43).
[2] As shown on Fig.19, blocks 1918 and 1926 are above and point to block 1910, therefore making blocks
1918 and 1926 ancestors of block 1910.

Regarding Claim 5, Hitz discloses a method wherein when the snapshot is accessed via the root node of the snapshot (column 11, lines 20-27, Hitz).

Regarding Claim 11, Hitz discloses a method wherein the file system is a Unix-based file system (column 23, lines 20-21, Hitz).

Regarding Claims 16 and 17, Hitz discloses a method wherein when a block of a file is modified (column 18, lines 4-7, Hitz), the new node associated with that file is set to reference a block that contains the modified block (column 11, lines 57-59, Hitz), rather than the block that contains the unmodified data (column 19, lines 31-35, Hitz).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   **Claims 3,4,6-10,12,13,and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitz (US Patent No. 5,819,292) as applied to claims 1,2,5,11,16,**

and 17 above, and further in view of Eshel (US Patent No. 6,959,310).

Regarding Claim 3, Hitz discloses a method to determine whether the ancestor node has been replaced during the current snapshot (column 20, lines 38-43, Hitz). Hitz further discloses a method wherein each new node has a snapshot identifier that identifies the snapshot during which it replaced a node and including checking the snapshot identifier of an ancestor node. Although, Hitz does disclose the snapshot having an identifier, which is essentially needed within a file system in order to distinguish which snapshots are new/replaced and which are not. However, Hitz does not go into great detail about the identifier of the snapshot. Therefore, to further expedite the examination, Eshel in more detail, discloses wherein each new node has a snapshot identifier that identifies the snapshot during which it replaced a node (column 25, lines 11-18, Eshel) and including checking the snapshot identifier of an ancestor node (column 19, lines 25-33, Eshel). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Eshel's teaching into the Hitz system. A skilled artisan would have been motivated to combine in order to optimize the retrieval process by allowing the system to easily recognize the snapshot and data, which were being searched. As a result, this enables the system to more efficiently utilize the memory within the processing equipment to, reduce the amount of time to produce the snapshot.

Regarding Claim 4, the combination of Hitz in view of Eshel, discloses a

method wherein when a node is not to be part of a snapshot (column 22, lines

11-14, Hitz), associating an indication with that node (column 22, lines 37-39,

Hitz) so that node will not be replaced when it or any descendent node is

modified (column 22, lines 62-67, Hitz).

Regarding Claim 6, the combination of Hitz in view of Eshel, discloses a

method wherein each new node has an identifier that is different from the

identifier of the node it replaced (column 27, lines 12-18, Eshel).

Regarding Claims 7 and 9, the combination of Hitz in view of Eshel,

discloses a method including associating the identifier of the replacing node with

the replaced node so that (column 11, lines 29-37, Eshel), when a request to

access a node identified by the identifier of the replaced node is received, that

association is used to access the replacing node (column 13, lines 7-13, Eshel).

Regarding Claim 8, the combination of Hitz in view of Eshel, discloses a

method wherein the associating includes storing the identifier of the new node in

the replaced node (column 13, lines 59-63, Eshel).

Regarding Claim 10, the combination of Hitz in view of Eshel, discloses a method wherein each node has a reference count that includes a count of the snapshots through which the node is accessible (column 25, lines 35-44, Eshel).

Regarding Claim 12, the combination of Hitz in view of Eshel, discloses a method wherein a snapshot identifier (column 25, lines 16-18, Eshel) is stored within each node (Fig.8B, item 802, Eshel).

Regarding Claim 13, the combination of Hitz in view of Eshel, discloses a method wherein a snapshot identifier (column 25, lines 16-18, Eshel) is stored as an attribute of each node (column 13, lines 20-25, Eshel).

Regarding Claim 18, the combination of Hitz in view of Eshel, discloses a method including reference counting each snapshot that refers to a block (column 25, lines 35-44, Eshel) so that the block can be removed when there are no more references to the block (column 26, lines 6-9, Eshel).

Regarding Claim 19, the combination of Hitz in view of Eshel, discloses a method including when the reference counting is performed using a table external to the block (column 5, lines 53-56, Hitz).

Regarding Claim 20, the combination of Hitz in view of Eshel, discloses a method wherein the table includes for each block a bit for each snapshot that indicates whether the block is referenced by the snapshot (column 18, lines 27-30, Hitz).

8.   **Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitz (US Patent No. 5,819,292) in view of Sekido (US Patent No. 6,311,193).**

Regarding Claim 14, Hitz discloses all of the claimed subject matter. However, Hitz does not explicitly disclose a method wherein a virtual identifier is stored within a node. On the other hand, Sekido discloses a method wherein a virtual identifier is stored within a node (Fig.18; column 9, lines 33-44, Sekido). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Sekido's teachings into the Hitz system. One would have been motivated to do so in order to ensure that the information being copied was correct and relevant to what was needed. The virtual identifier is an implicit or abstract representation of information and is therefore not physically on the system. As a result, this increases much needed storage space within the system.

Regarding Claim 15, the combination of Hitz in view of Sekido, discloses a method wherein a virtual identifier is stored as an attribute of a node (column 14, lines 17-21, Sekido).

Other Prior Art Made of Record

1.   Kapoor et al. (US Patent No. 6,959,313) discloses a method and system of snapshot management of a file system in a data storage system. To represent the snapshots, the invention maintains pointers to the root block pointer of each snapshot. When the active file system is modified, this invention avoids overwriting any blocks used by previous snapshots by allocating new blocks for the modified blocks.

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chelcie Daye whose telephone number is 571-272-3891. The examiner can normally be reached on M-F, 7:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Chelcie Daye
Patent Examiner
Technology Center 2100
January 6, 2006

SAFET METJAHIC
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100